[WITH INDEX SUPPLEMENT.]

THE OPTICAL MAGIC LANTERN JOURNAL AND PHOTOGRAPHIC ENLARGER.

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Notices.

THE *Optical Magic Lantern Journal and Photographic Enlarger* is issued on the 1st of every month, price One Penny, and may be obtained from all Newsvendors, Railway News Stalls, Photographic Dealers, or from the Publishers, at the following rates, post free:—

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Notes.

WITH this number we complete our First Yearly Volume, and with it issue the Index. A few copies of Nos. 1 and 2 may be obtained at sixpence each. Binding cases will be ready shortly, price one shilling.

* * *

THE Eastman Company are to have a factory at Harrow.

* * *

EIKONOGEN developer has not, it appears, become popular in France, but Americans have taken kindly to it.

* * *

MR. JONATHAN FALLOWFIELD (Mr. Hindley), of Lower Marsh, intends moving in a few weeks to central premises near Charing Cross.

* * *

THE Photographic Convention will meet this year at Chester, from June 23 to 28. The opening evening will take the form of a conversazione, and after the President's address, a lantern exhibition will be held.

* * *

LONDON is to have a trade Photographic Exhibition (admission free). It is to be open from May 30 to June 10, and will be held in the Drapers' Hall, Throgmorton-street, E.C. Full particulars may be obtained from Mr. E. Cocking, London Chamber of Commerce, E.C.

* * *

THE following medals were awarded for lantern transparencies at the Newcastle Exhibition:—Gold medal, J. E. Austin; silver medals, Messrs. R. S. Redfield, H. Little, W. Parry, G. W. Wilson and Co.; bronze medals, Messrs. Wilson, Parry, J. A. Sinclair; extra silver medal for transparencies in the Mawson lantern plates, E. G. Lee.

* * *

WE have been requested to announce that the adjourned annual meeting of the Photographers' Benevolent Association will be held on the 2nd inst. at 181, Aldersgate-street, E.C.

The Magic Lantern: Its Construction, Illumination, Optics & Uses.

CHAPTER XI.—THE POSITION OF THE LIGHT.

WITH regard to the relative position of the source of illumination to the condenser, it should be remembered that the light must be placed, not only at the proper distance from it, but also in the exact axis of the optical combination, in order to project a properly illuminated disc upon the screen. By properly illuminated is understood that the circle of light shall be of the same intensity throughout, and quite free from the least trace of shadow, either at the centre or sides; and unless the light is in its proper place, dark patches will appear on the screen according to the relative displacement.

If the patch appears on the right hand side of the disc, as at Fig. 38, the jet will be found to be too much to the left hand side of the condenser, and it must be gradually moved towards the other side. Should the shadow, however, appear as in Fig. 39, the jet must be moved in the opposite direction until the side shadows disappear from the sides of the disc.

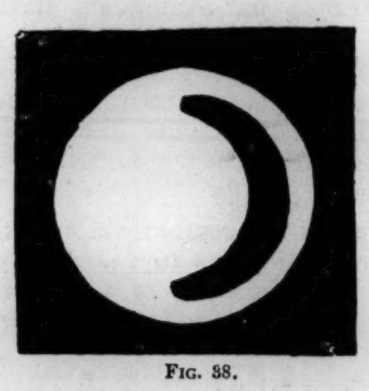

FIG. 38.

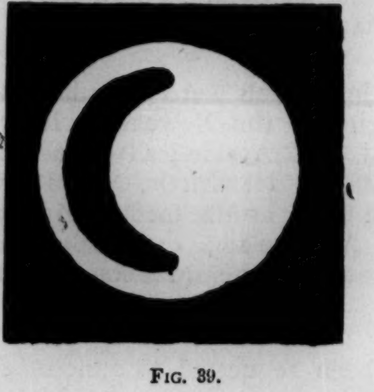

FIG. 39.

On the same principle, if the flame is below the centre of the combination, a shadow, as at Fig. 40, will be cast; and if too high, a patch will appear upon the screen in the position shown at Fig. 41.

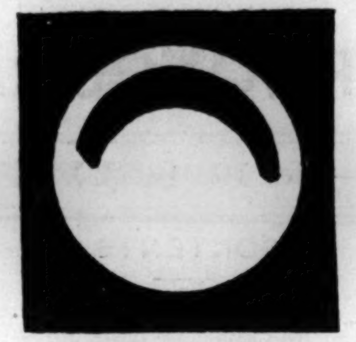

FIG. 40.

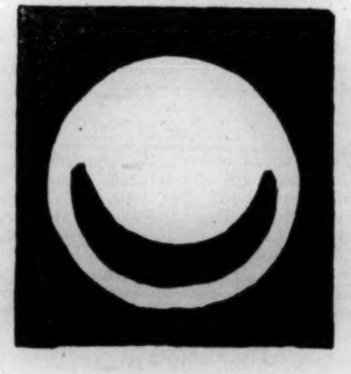

FIG. 41.

The aforementioned shadows, which are of a bluish-grey colour, will only appear as stated if the light be at, or about, the correct distance from the condenser. Patches of a different shape will be shown if the distance of the light from the condenser is either too great or too little.

A shadow of a circular fringy character, in the locality shown in Fig. 42, denotes that the light must be pushed further forward; whilst a central dark spot, as at Fig. 43, indicates that the flame is

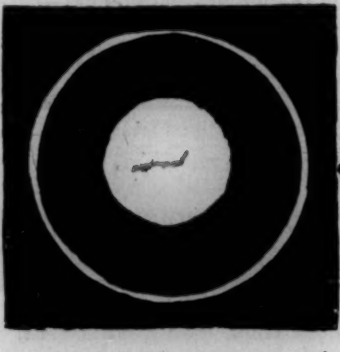

FIG. 42.

too near the condenser, and that it must be withdrawn until this mark disappears.

By gradually adjusting the position of the flame sideways, up and down, and to and from the condenser, all these markings will vanish, leaving the disc evenly illuminated; and although it is not a difficult matter to centre the light, a want of harmony is produced if it is not correctly managed.

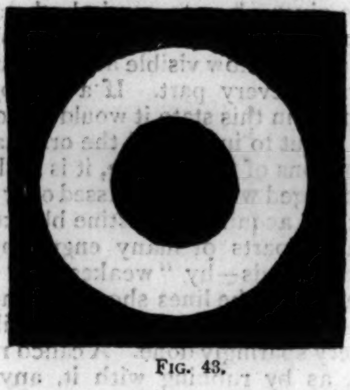

FIG. 43.

:o:

Hand Cameras for Obtaining Slides for the Lantern.

No. 1.—THE "GIAH."

THE "Giah" is to the ordinary camera what the breech-loading rifle is to the old muzzle-loader, when we consider the ease with which photographic "shots" may be taken; in fact, considering that one of the main features in it is the rotary slide, it may be termed a "revolver."

It is the invention of Mr. Chas. Winter (the London representative of Messrs. Mawson and Swan), who also acts as its godfather, seeing that the euphonious name of "Giah" is Welsh for winter.

The inventor has not copied or improved any existing camera, but has carefully thought out and executed an entirely new and original apparatus. There are no sheaths, changing-bags, or other detached parts. In loading, the front of the camera is opened, and a dozen plates—requiring no "backing"—can be at once placed film downwards in the grooves at the top. When the last plate is in, it glides easily into the top groove in the rotary slide, and a light flap, or catch, prevents its return. A quarter turn backwards of the handle attached to the axis of the rotary brings the plate in the right position for exposure, and by a recent improvement the "quarter turn backward" cannot be given unless the plate has been properly discharged into the slide. After exposure another quarter turn backward brings the plate to the bottom of the camera opposite its place on the lower part of the lift of grooves, into which it is readily discharged by a slight tilt downwards.

By this time the second unexposed plate at the top is ready to glide into the rotary slide, and the "quarter turning" is repeated until the whole of the plates are exposed, and deposited in the lower set of grooves. A reference to the annexed diagram (Fig. 1) will aid the reader in following these movements, which are extremely easy in practice.

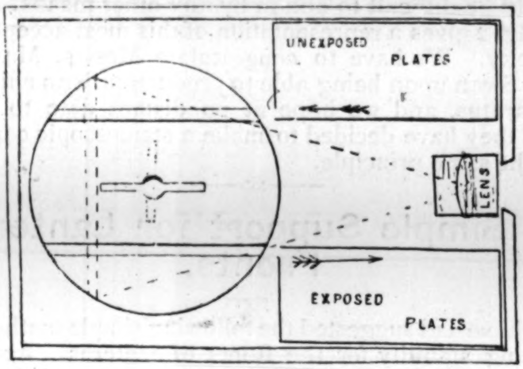

FIG. 1.

In order that the quarter turns may be made accurately there are four V-shaped notches, at equal distances apart, in the circumference of the *rotary slide*, into which a small stop falls with a slight click when the plates are in their correct positions, and these notches are measured so correctly as to be within the thousandth part of an inch. While, therefore, all the mechanism is invisible to the operator, he has the most complete command over the working of the apparatus.

It may be stated that the "Giah" is conspicuous by its unobtrusiveness. In this it makes a very decided step in advance, for with the aid of a specially designed shutter the lens remains hidden, except during the instant of exposure.

The shutter has the appearance of being a part of a strap connected with the carrying handle, but is in reality a metal strip. By turning this metal strip half a turn to the right the shutter is set; but the lens still remains covered. It is now only necessary to touch a small knob at the bottom of the camera and the metal strip flies backwards, and in the meantime the plate has been exposed.

The length of exposure may be adjusted by an index finger at the foot of the case, and an index at the side also shows the number of the plate ready for exposure.

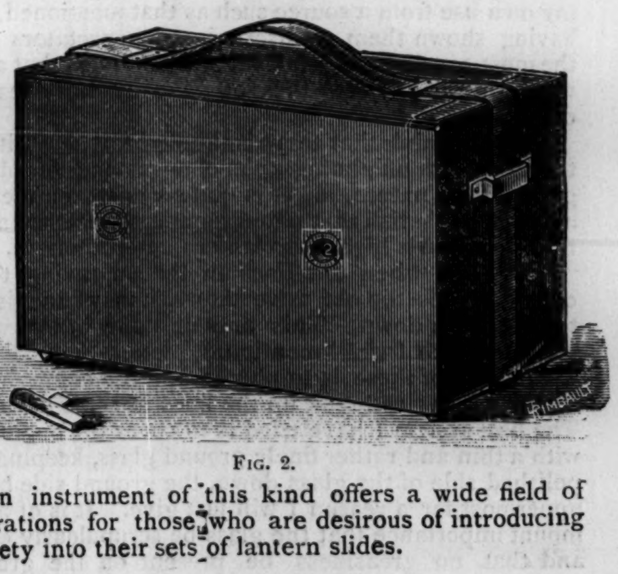

FIG. 2.

An instrument of this kind offers a wide field of operations for those who are desirous of introducing variety into their sets of lantern slides.

The "Giah" is made in two sizes—the lantern plate and quarter plate. The rapidity with which it may be worked offers opportunities for placing on record many momentary scenes of street and country life, which it would be difficult to obtain by any other means.

Fig. 2 gives a representation of this most acceptable novelty. We have to congratulate Messrs. Mawson and Swan upon being able to produce such an efficient apparatus, and we hope at no distant date to hear that they have decided to make a stereoscopic camera on the same principle.

—:o:—

A Simple Support for Lantern Fronts.

WE have had suggested the following simple method of gaining stability for the fronts of lanterns. Around each nozzle is attached a collar, fastened in the same way as that used on small telescope stands. From this collar, both top and bottom is attached a rod of a few inches in length. On one is cut a screw thread, and to the end of the other is attached a capstan swivel, with a thread at the end to fit the screw upon the rod. To operate, the swivel hanging from the lowest nozzle is screwed on to a rod fastened in an upright position on the lantern stand ; the swivel pending from the middle nozzle is then secured to the projecting rod of the lowest nozzle, and in like manner the top and middle rods are fastened. By tightening the swivels, both support and stability are imparted to the nozzles.

—:o:—

New Method of Preparing Engravings for the Lantern.

THERE are innumerable engravings to be found everywhere, and especially in the illustrated monthlies, that are so well adapted for converting into lantern slides that the wonder to me is, that they have not been utilized for this purpose long since, or that attention has not been more specially called to their fitness for such use being made of them. Having a series made for my own use from a source such as that mentioned, and having shown them to discriminating spectators with the most excellent effect, I am of the opinion that a few words on this subject will be of use to my fellow-readers of this journal.

I do not think that there is the slightest necessity for trying to pass off photographs of engravings for photographs from nature, for it is quite a mistaken idea for any one to cherish that photographic subjects are alone fitted for even a high-class lantern entertainment.

However, when the lines in the engraving to be copied are of a too obtrusive nature, it may be advisable to tone them down. This may be done in two ways, both of which I shall mention.

The first of these is to photograph the engraving in such a way as to break up the lines in some measure. The best system I have tried is to cover the engraving with a thin and rather finely ground glass, keeping the polished side of the glass down, the ground side being uppermost for a reason I will just give. It is of paramount importance that the glass be scrupulously clean and that no greasiness be present on the ground surface. An application of ammonia (followed by water), nitric acid, or even soapsuds will ensure this necessary condition.

Now, having laid this plate down upon the engraving in the way I have prescribed, note that everything has now a pencilled effect, that the bold blackness of the engraving has given place to precisely the appearance as if the work had been executed by a graphite pencil. None of the lines are now visible as lines, but a delicate softness pervades every part. If a photograph were taken of the print in this state it would be too soft to be of much use. But to impart all the original vigour to the salient portions of the picture, it is only requisite that a brush charged with oil be passed over the ground glass, when it will acquire its pristine blackness.

As the weakest parts of many engravings are the skies and foregrounds—by "weakest" I mean here those parts in which the lines show with most marked prominence—such portions should not be oiled, or if so it should be very sparingly done. A calico rag is useful at this stage, as by rubbing with it, any part may have its strength subdued to any necessary or desired extent. When a negative is taken of either a wood or steel engraving that has been "faked" in the way described, and a transparency then made from such negative in the usual way, it is exceedingly difficult to discover when on the screen that the original may have been an ordinary wood-cut in the *Century* or in any of the illustrated papers.

The second way to which I have alluded, consists of photographing the engravings in the usual manner, but putting it a little out of focus when doing so. I have never found this quite satisfactory. Neither has it been satisfactory to have the transparencies quite sharp, and then put them a little out of focus when throwing them on the screen. If a transparency of this kind must be shown, it is much better to have a special old-fashioned un-achromatic lens in the lantern, as it does not give absolute sharpness, no matter how carefully the attempt to focus is made. This is the better plan of the two, but still it is not eminently satisfactory, for owing to the general use of achromatic lenses in lanterns, the public are now educated to expect the acme of sharpness in projected pictures; and they will not easily be satisfied with less.

Having now described the two ways by which engravings may be prepared for lantern exhibition, I say without any hesitation that the first system is so greatly superior to the second as to leave no room for comparison between them. The adoption of this method of preparing engravings instead of natural photographs for lantern work will open up a wide door of usefulness in the preparation of illustrations for lectures on travel, and indeed on any of the thousand and one topics which are treated in illustrated serials and books. W. BLOXHAM, M.A.

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A Simple Apparatus for Generating Oxygen Gas.

C. F. GOHRING recommends the below-described method and apparatus (says the *Photographic Times*), for preparing pure oxygen gas on a small scale. A large flask with spout, and graduated, with a rubber stopper through which three stoppered funnels pass.

The latter are filled, respectively, with concentrated water of ammonia, solution of permanganate of potassium (5 Gm. in 1 liter), and concentrated phosphoric acid. In order to afford to the eye a criterion to ascertain when the contents of the flask or reservoir are alkaline or acid, the ammonia may be tinted with phenolphthalein, or the phosphoric acid with methyl-orange. The flask or reservoir is filled about two-thirds full with peroxide of hydrogen solution.

To generate oxygen, ammonia is allowed to flow into the flask until the contents are rendered alkaline (and show the phenolphthalein tint, if this indicator has been used). Solution of permanganate is then allowed to flow in, in drops, when oxygen will at once be given off, which may be conducted by suitable tubing to where it is wanted. When the current is to be interrupted, enough phosphoric acid is allowed to run in to neutralise the ammonia and render the liquid acid. When the current is to be started again, the liquor need only be supersaturated with ammonia. Thus the current may be started and stopped until the peroxide is exhausted.

If the strength of the peroxide has once been determined by acting upon a measured quantity in the flask by the process here described, it will be easy to predetermine the quantity of peroxide to be used in order to obtain a certain quantity of oxygen.

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Charging Gas Cylinders at Home.

EVERY exhibitor who uses the lime light and has had the opportunity to use the gas cylinders always regrets, says *The Exhibitor*, going back to the bags. One reason is that with the bags he cannot possibly get the same quantity of light as with the cylinders, because he uses much more gas under the heavy cylinder pressure, and for a much stronger reason, he regrets the want of the cylinders because of the inconvenience occasioned by the large and weighty press-boards, and the annoyance they occasion by blocking up passages, &c.

This feeling has induced a number, and I must say more than we expected, to get cylinders whenever they were in reach of a pumping plant; and others have been courageous enough to purchase the cylinders and pump. One of these latter has requested us to write an article on the use of the gas pump. The hand gas pump, as we may term it, consists of two kinds—one having a fly-wheel, and the other working with a lever direct. The first gives speed, especially while the pressure is low; the latter gives power; this will be found necessary when the pressure is high.

The gas pump consists essentially of four different parts, the lever, barrel and piston, the exhaust-valve and the condense-valve.

When pumping house-gas, the connection can be made direct with the house-gas pipes. When this method is used, care should be taken that no gas burners are on in the immediate vicinity of the pump, for the moment the pump exhausts, the light will be extinguished and the air would be drawn into the pipes at the next exhaustion, and so continue as to make a mixture of house-gas and air, which would be quite dangerous.

The safer plan, if the pumper has no control over the pipes and burners, would be to fill a gas bag and from that pump the house-gas. The oxygen gas is necessarily made first into the bag, and from it pumped into the cylinders. Care should be taken to thoroughly wash the oxygen gas by passing it through lime water and a solution of sulphate of iron.

The two valves belonging to the pump should be easy of access, so that they can be readily cleaned or repaired, as may be necessary. The piston of the pump should be so constructed that the pumper can easily tighten the packing, as upon this part of the pump most of the wear occurs. It is advisable to pump water through the pump frequently, in order to clear from the passages and valves any dirt that may collect.

The valves should be kept oiled* as well as the piston, also all parts where there is any movement that will occasion wear. The stroke of the pump should be full, drawing the piston well up to the top, so as to take in all the gas that the barrel will admit, and it should be driven down close to the bottom, so as to drive out all of the gas in the barrel.

The barrel and condensing valve should be kept covered with water, because the continual friction generates heat, which would ultimately destroy the packing. The valve most likely to get out of order is the condensing valve. The slightest obstruction in the way of dirt that may settle on to the seat of this valve will cause it to leak, because upon it comes the whole pressure that may be in a cylinder.

It will be found, after the pump has been used for some time, that the seats of the valves, especially of the condensing valve, have become roughened, and perhaps have become so much so as to cause a leakage of the gas. This is indicated immediately by the fact that the operator is not able to draw any more gas into the barrel. The reason of this is that the condensing valve is not in good order, and does not hold tight.

The exhaust valve rises merely by the pressure of the air, which is fifteen pounds to the square inch; but in case the condensing valve leaks, then the pressure from the cylinder goes back into the barrel and presses on to the top of the exhaust valve; and if the pressure in the cylinder is about fifteen pounds or more it is evident that the exhaust valve cannot rise, and consequently the operator cannot draw any gas. Another evidence of the leak at the condensing valve will be the fact that when he places his piston at the bottom the pressure of the leaking gas underneath it will force it up to the top of the barrel. When this happens the only remedy is to take out the condensing valve and remove the dirt, if that is the cause. Or if the cause is, as stated before, a roughness formed by the eating of the oxygen gas and the wearing of the moving gas, the seat of the valve will have to be re-ground.

If it is a flat valve it is easily done with what is called Scotch stone. A little water is applied to the stone and it is carefully rubbed over the surface of the valve seat, until the surface is uniform, smooth, and flat. The leather washer of the valve proper should be smooth, firm in texture, and still pliable enough to set firmly upon the seat of the valve.

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* We and others in this country hold that it is extremely dangerou to use oil with valves through which oxygen has to be passed.—ED.

Attention must be given to the fact that the valve works freely and sets squarely into position. The same instruction may be taken for the exhaust valve, although it is not as liable to get out of order as the other. Care should be taken that the rubber tubing running from the exhaust valve is not allowed to lie upon the floor; for if it were, and it was not connected with the bag or other receptacle for containing gas, and the pump was worked, all the dust and dirt lying upon the floor, in the immediate neighbourhood of the tube, would be drawn into the pump.

The connecting pipe between the condensing valve and the gas cylinder may be of lead pipe or strong rubber tubing; the latter is preferable. Near the cylinder there should be a T joint, on to which is attached the gauge, so that the pumper can at all times know what pressure he is getting.

The speed with which a cylinder can be filled depends entirely upon the capacity of the pump; which capacity is dependent upon the stroke and diameter of the barrel, and also upon the capacity of the cylinder to be filled.

As a matter of course, pumping a gas cylinder up to two hundred pounds is no light work; but the advantages to be gained by having cylinders in preference to bags are well known, and these advantages are the compensation for the extra labour.

It is the custom of those who have been using cylinders and pumps to pump each day the quantity equal to what may have been used the night previous.

For instance, saying that one has found by experience that he uses about sixty pounds pressure a night, he would have originally pumped his cylinders up to one hundred and sixty pounds, so that each day he will only have to pump up sixty pounds beyond the hundred. This method makes the work more uniform, and has another advantage. The operator becomes accustomed to using the lantern under the same pressure at all times, and can thus have a more even result. Keeping the cylinders up to a uniform pressure such as mentioned, one hundred and sixty pounds, will enable one, in case they are forced to give two consecutive exhibitions without a chance to pump, to give both without running out of gas, as they should have at the end of the second exhibition forty pounds pressure, which will be ample.

Stereoscopic Relief on the Lantern Screen.

DR. E. SCHOBBENS, of Antwerp, writes that he has elaborated a method of seeing a magic lantern projection with perfect stereoscopic relief. Many enthusiasts have proposed the method of using two lanterns, and throwing into one disc on the screen the two halves of a stereoscopic transparency in the full expectation of obtaining stereoscopic relief. But this is a fallacy; two different pictures certainly are required for the production of true stereoscopic relief; but here is the error—each eye must see only one picture, and that picture the one specially belonging to it. Dr. Schobbens obviates all difficulty by making his two pictures (by means of slips of coloured glass) of entirely different colours—red and green. Next every spectator is to be provided with a special pair of spectacles, with one eye green and the other red. By this plan each eye can only see the picture that is of the same color as its corresponding tinted glass in the spectacles. The conditions required for stereoscopic vision are then fulfilled, and it is a reasonable expectation to see a stereoscopic representation on an immense scale.—*Photographic Times.*

Transparency Developer.

THE following developer for lantern slides is recommended by Mr. A. Cowan. It is said to be very powerful, and will keep clear during the development of many plates:—

Rochelle Salts	... ...	25 parts.
Sodium Sulphite	... ...	25 „
Lithium Carbonate	... ...	1 „
Pyrogallic Acid	... ...	2 „
Water	... ...	450 „

Lantern Slide Making.

IN a paper read before the Hackney Photographic Society by Mr. J. Carpenter, he gave the following lines of his experiences in making lantern slides. He had used contact printing exclusively for the production of transparencies. By contact, he said the first essential was to get the image properly placed on the plate, so that when the slide was finished and viewed by the lantern it would look its best; and although it was not to be expected that first attempts would prove successful, even if the negatives were good, still with practice the tyro would rapidly improve in the quality of his slides.

An essential point, Mr. Carpenter explained, was purity of the high lights, and he found it very convenient to have the glass bed of the printing frame covered with opaque paper, excepting an opening of ⅛ inch smaller than the lantern plate, which ensured a margin of clear glass, which can be used as a comparison with the high lights of the finished picture.

Respecting developers, there were a great many, and all those given by the makers were good if followed correctly; but in his hands the best to ensure perfect purity and freedom from stain was the Ferrous Oxalate. If warmth of tone was desired, he preferred pyro. Eikonogen, in his opinion, was very valuable, as it could be used for many plates in succession.

The principal success of slide making was in the correct exposure, and he impressed upon his hearers always to use the same power of light, and the plate at the same distance, the only variation to be in the length of exposure, according to the density of the negative; even a slight over-exposure would mar the beauty of the result; and the consequent loss was not a profitable exchange for a warmth of tone, which was easily given by correct exposure when a different developer was used. Various developers require different exposures; and with regard to plates, all plates were good if treated according to their wants; but the best advice was to learn all about one particular plate and one particular developer, and to adhere to that as a certain means of producing uniform work.

Mr. Carpenter developed several plates—which had been previously exposed—in order to demonstrate his remarks. He thought it best to work in plenty of safe light. Dishes must be scrupulously clean, so as to avoid any stains. He found it preferable to fix in two baths. In the first until apparently fixed; and in the other for as long again. When using eikonogen the development must be carried far, owing to the thinning-out effect of the fixing, or a thin slide would result, requiring intensification, which meant making the best of a bad job.

Should the Lantern Have a Season?

FROM this journal I have received sound and valuable advice anent lanterns and kindred subjects, and although I had previously thought I knew all about it, I now realize how little I did know.

To many people the season (so called) for the lantern has now almost closed, but why "season" I am unable to say. Perhaps the lantern is by them still considered, as of old, an adjunct to a children's party, where comics for the most part are projected upon the screen; and the "party" season being round about Christmas time, the magic lantern must be stowed away in its box until the time comes round again.

Such thoughts might have been all very well for the days gone by of the flickering oil light, but with modern apparatus, modes of lighting, portable gas bottles, and high-class pictures, there should be no season set apart especially for it, any more than there should be a season for looking at pictures on paper.

It is beyond doubt an acknowledged fact that when a transparency is thrown on a screen, even if only a few feet in diameter, not only are several people enabled to see the picture at one time, but it is a very great relief to the eyesight compared with attempting to fathom the detail contained in a print, the dimensions of which are limited to a few inches. Besides, from a social point of view, the differences are considerable, for as each individual sees the picture at one and the same time the interchange of opinions is facilitated. In the case of a small picture which is handed about, each wants to again look at it to ascertain if the criticisms are justifiable.

Personally, I enjoy many an evening all the year round by the aid of the lantern, a few friends, a cigar, and an easy chair. At first, like many others, I took it for granted that an absolutely darkened room was required, and to attain this effect in the *long days* I made a light wooden frame to fit each window in the room. These frames I covered with two thicknesses of brown paper. After using for some time this method of blocking out the light, I had occasion to move to another house, and as my frames were too small for the windows, I merely set them up to keep out as much light as possible, and finally discarded them altogether in favour of drawing down the blinds, and this I have since adhered to. But I fancy I hear some one say, "That will not keep all the light out," to which I answer, "No;" and it is not necessary that the light be so absolutely shut out. A little does no harm, and until it has been tried, it is surprising how much extraneous light may be permitted in a room where a lantern is being used.

Let those who have doubts about this, project a picture upon a screen some dark evening when the gas is fully alight, and gradually turn it down until it does not interfere with the lantern illumination, or else try the same experiment by adjusting the window blinds, and they will soon see that absolute darkness is not essential. Having found this out, they can then ask themselves the question, Should there be any "season" for the lantern?

It is my intention to take many half-plate negatives during the next few months of bright days, and I hope to amuse myself and my friends from time to time by looking at them enlarged on a screen.

I adopt the method of making transparencies described in a former number of this journal by Mr. Andrew C. Cole, *i.e.*, by reduction; and if this gentleman should see fit at any time in the near future to compile a table to show at a glance the requisite distances of lens, &c., for reducing from other sized negatives, I feel assured that it would be a great help to many fellow-workers. PIERCE KENDALL.

The Lantern Society.

THE inaugural exhibition of lantern slides of this society took place last Friday in the theatre of the Society of Arts, when upwards of one hundred and fifty lantern transparencies were projected before a large audience. The slides, which included English, Canadian, Indian and Continental views, were lent by Messrs. Bethel, Maw and Gladstone. The illuminant used was the electric light, and the lens had been specially fitted by Steward.

The objects of this society are to develop and popularise the use of the optical lantern in connection with art, science and recreation, and to unite those interested in such work.

Those desirous of joining may obtain full particulars from the Hon. Sec., Lieut. C. E. Gladstone, R.N., 6, Bolton-street, Piccadilly.

Correspondence.

TAP ON GAS BAG.

[*To the Editor.*]

SIR,—In some cases the taps of gas bags are fastened to the thick end, and in other cases to the thin end of the wedge. Can any of your readers inform me of the why and wherefore of this? Is one end any better than the other? What is the nature of the vortex produced in the bag by the different positions of the tap?—Yours, &c., VORTEX.

WHAT'S THE FOCUS?

[*To the Editor.*]

SIR,—I have lately exchanged the objectives of my bi-unial lantern, and am now at a loss how to compute the distance I must be from the screen, as I do not know what focus the lens is called. Can you help me from the following particulars?—My old lenses were 2in. in diameter, and were called 5-in. focus; my new ones are 2⅜in. diameter and much longer.—Yours, &c., OPERATOR.

[We are sorry we cannot answer your question. We will ask you one of a similar nature: Upon our table we have a ruler ½in. in diameter and 11in. long. We have another at home, but it is 1in. in diameter. How long is it? Particulars are given on page 22, which will enable you to calculate the focus of your lens.—ED.]

PHOTOGRAPHIC SOCIETY OF IRELAND.—On the 27th March, the technical meeting was presided over by Professor J. Alfred Scott, M.B. (vice-president). Mr. J. H. Hargraves gave a short description of the Forth Bridge, and illustrated his remarks by a dozen lantern slides. The vice-president exhibited Tyler's lanternscope, through which a large number of slides were examined. During the remainder of the evening a lantern exhibition of members' work was held, when over one hundred slides were passed through the lantern. A slide, mounted with a mask of the palest of colours issued by Wormald, was passed through the lantern to show that it was opaque, and not semi-transparent, as had been suggested on a previous occasion.

On the 11th April the ordinary meeting was held. George Mansfield, J.P. (president), in the chair. Professor J. H. Stewart, B.Sc., delivered a lecture on "The Stop of the Optical Centre." Copious and well-chosen blackboard diagrams were made, and the matter was carefully discussed by many of the members present. Professor J. Alfred Scott, M.B., submitted a formula bearing on instantaneous work, which he introduced by suggesting that if anyone could set down and easily decide what could be done with a certain lens, stop, plate, and exposure the day before going on tour much time and plates would be saved. He therefore thought the following formula would be useful :—

Let r = rapidity of plate.
„ e = exposure in $\frac{1}{100}$ of a second.
„ d = diaphragm (uniform system number).
„ t = light (time of day and month) (= *vide* Scott's tables).

$$c = \text{cloud} \begin{cases} \text{bright sunshine} = \times 1. \\ \text{clouds} = \times 2. \\ \text{dark clouds} = \times 3. \\ \text{sea and sky} = \times 1. \end{cases}$$

„ s = subject, open landscape = × 3.
light foreground = × 10.
heavy foliage foreground = × 20.

As example :—

$$\frac{r \times e}{a \times c \times t \times s} = \frac{30 \times 1}{4 \times 1 \times 1\frac{1}{4} \times 20} = \frac{30}{100}$$

When the equation works out to $\frac{1}{3}$ it is possible to expose a plate with the factors as above, which is rather over $\frac{1}{3}$, and shows that with a 30-times plate, an exposure of $\frac{1}{100}$ of a second a No. 4 stop at mid-day in April and bright sunshine, a heavy foliage foreground can be taken with fair results.

—:o:—

Notes and Queries.

J. R. Storr.—Treat the fabric the same as a paper print. Place the mountant upon the cardboard.

Novice writes : "I enclose a couple of negatives taken with———detective camera. Please tell me how to get better negatives, as they do not make good prints. Do you think the camera is at fault, and would you advise me to dispose of it and procure one of———?" *Answer.*—Both of the negatives are underexposed. The make of camera which you have is good, and we do not think there is much to choose between that and the one you mention. Try a quicker brand of plates.

A. Rothon.—Quarter plate size.

Jas. Bradshaw, jun.—Two ground glasses, separated a few inches and placed between the negative and the flame, will give a more even illumination than one only.

Detective.—We know of no dealer in this country who is agent for the "*Ultimate hand camera.*" The makers are Queen and Co., of Philadelphia. It is provided with dark slides. We have no acquaintance with the instrument.

Lantern writes : "It gives me great pleasure to tell you that I have found your excellent journal most useful to me during the past winter in the general management of my oil lantern, and being about to make a biunal with iron body during the coming summer months, I have made bold to ask you the following questions : (1) How is the heat conveyed to chimney when using the bottom lantern, and do you think there would be any harm done, or would it answer the purpose if the partition between the two lanterns was well perforated ? I intend using a blow-through jet. (2) What kind of photographic lens would make objectives, and what size should I ask for? (3) Where can I get the adjusting screws used for raising or lowering the stages so as to make the discs coincide ? (4) Could you give me a nice, suitable and convenient size for body as small as possible, as I want it for travelling purposes ?" *Reply.*—(1) The partition or shelf may be fastened at the front and back only, leaving a space at the sides ; (2) See our article on page 18, and the table on page 22 ; (3) From any of the dealers in lanterns ; (4) The size may be anything from 6in. by 7in. by 16in.

J. L. Blake writes : "Will you kindly inform me which of the following lanterns is the better—E. G. Wood's *Euphaneron*, or J. H. Steward's *Improved Photogenic Lantern ?*" *Answer.*—We are not in a position to say that one is *better* than the other. Both makers have a high reputation, which their apparatus amply sustains. You did not put your address on your letter.

R. G. Wheeler.—Received with thanks.

Ch. Chambers.—There is no patent. A mixture of Chinese white and gum arabic will enable you to write the names on the black mat of your slides.

Subscriber.—Under the circumstances you might draw a circle 3in. in diameter on the ground glass, and also a cushion shape.

Rex inquires : "When both the oxygen and hydrogen bags are used in one set of pressure frames, does it make any difference which is placed uppermost ? I have been in the habit of placing the oxygen supply in the upper part of the frame, and the hydrogen in the lower, but I have just been told by an old lanternist that they should be placed in the opposite order. *Reply.*—No difference. Some use it one way and some the other.

Robert Dearness.—"I want to make a transparency of a particular building, but I find my camera and lens makes it too large on the plate. Of course, if I could get further from it I could get it smaller, but unfortunately I can't get further off, as other buildings are in the way." *Answer.*—You require a lens of shorter focus.

P.—Thanks for the description of Edwards' carrier. We published a drawing of it last December.

W. King, jun.—Print with ordinary type upon a sheet of gelatine and place between two glasses. We think you can obtain the gelatine sheets from Mr. Findlay, 11, Bothwell-street, Glasgow.

E. N.—We are informed that *Russian* iron is now made in Birmingham.

We have to acknowledge receipt of catalogue of the Grand International Photographic Exhibition, held at Newcastle-on-Tyne.

—:o:—

HACKNEY PHOTOGRAPHIC SOCIETY.—Last Thursday this society held its first annual conversazione at Morley Hall, Hackney. During the evening songs and recitations were rendered by members and their friends. Mr. H. J. Beasley performed some interesting feats of legerdemain, and a good collection of slides, the work of members, was projected by the lantern. The light used was oxy-calcium.

—:o:—

FROM the amateur's point of view the following advantages are attached to a stereoscopic outfit: compactness of apparatus, certainty of producing a pleasure-giving result under disadvantageous circumstances, suitability of apparatus for taking single pictures of artistic proportions, and large enough for most amateurs.—*G. D. Macdougald.*